

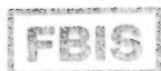
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USSR Report

CONSTRUCTION AND EQUIPMENT

No. 53



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CONSTRUCTION

CAPITAL INVESTMENT IN KIRGHIZ SSR CONSTRUCTION EXAMINED

Moscow FINANSY SSSR in Russian No 11, Nov 81 (signed to press 15 Oct 81) pp 40-42

[Article by U. Nabitayev, manager of the Kirghiz Republic Office of the USSR Stroybank: "New Management Stage"]

[Text] The acceleration of scientific-technical progress and changeover of the economy to an intensive path of development demand fuller use of the country's production potential and improvement in work quality in all links of the national economy. The efficient use of capital investments, concentrating material-technical and other resources at the most important construction projects and involving uninstalled equipment in production are tasks of top-priority importance.

The tremendous scope of capital construction faces republic Stroybank workers with the task of strengthening their monitoring of increasing capital investment use effectiveness. The basic attention of bank office and institution collectives has been focused on ensuring the effectiveness of capital investment use, improving construction quality and lowering construction cost, promptness in ensuring financing for work done, monitoring progress in building start-up projects better, increasing the effectiveness of credit use and improving work forms and methods. During the 10th Five-Year Plan, republic national income grew by 19.2 percent and fixed production assets grew 1.4-fold. Some 4.7 billion rubles, 600 million more than in the preceding five-year plan, was directed into developing the republic's national economy.

In recent years, the republic has put up and continues to build enterprises of new branches of industry (tool building, machinebuilding, power engineering, electronics, and others). In 1975-1980 alone, we began construction of a chalk combine in Rybach'y'e and a mixed feed plant in Naryn, gravel-screening plants in Przheval'sk and Osh, the Tash-Kumyrskiy tobacco-fermentation plant, a hydroelectric power plant cascade on the Naryn, dairies in Przheval'sk and Osh and a worsteds textile mill in Tokmak.

During the 10th Five-Year Plan as a whole, the republic improved production capital investment planning, lowered the proportion of new construction and increased expenditures on retooling and renovating existing enterprises. Whereas 33.4 percent of the capital investment was directed into building new enterprises in 1976, that figure had been reduced to 31.7 percent in 1977, 29.9 percent in 1978 and 24.5 percent in 1980. At the same time, retooling expenditures had increased to 20.4 percent in 1980 as against 5.4 percent in 1976. All this enabled us to concentrate capital investments at start-up construction sites and projects in the republic.

This office is constantly working to concentrate monetary and material resources at start-up projects. Therefore, some 30 projects with a total estimated cost of more than 26 million rubles and an annual capital investment of seven million rubles were excluded from the 1980 plan. At the same time, the plan for putting fixed assets into operation at 84 projects was increased by 31 million rubles. Among those eliminated were such large projects as the warehouse center of the Ministry of Trade in Frunze, estimated cost -- 7.8 million rubles, and a 2.9-million ruble passenger car fleet. A significant proportion of them were administrative, sports and public buildings: a 560,000-ruble swimming pool at the Ala-Too recreation center (annual work volume -- 329,000 rubles) and 744,000-ruble total estimated cost track and field facility, riding school and sports pavilion of the Committee for Physical Culture and Sports (annual volume -- 600,000 rubles). Construction of six previously begun administrative buildings with a total estimated cost of 4.1 million rubles and an annual volume of 1.2 million rubles has been postponed. The technical readiness of these projects does not exceed 30 percent. During the last five-year plan, 241 construction projects with a total capital investment volume of more than 41 million rubles were eliminated from the plan at the suggestion of the bank.

At the same time, we have observed instances of scattering capital investments among numerous projects. This concerns construction projects of the Kirghiz SSR ministries of building materials industry, construction, housing and municipal services. The Ministry of Building Materials Industry, for example, has been allocating capital investments for carryover construction projects in lesser amounts each year, for which reason the scheduled completion of this construction is carried over to subsequent years. This ministry did not include in the 1981 capital construction plan five projects with a carryover estimated cost of 37 million rubles, including 31 million rubles worth of construction-installation work, attributed to the union-republic volume. It allocated only 400,000 rubles for seven production projects, although a maximum of 1.6 million rubles had been agreed to. And, in this regard, the ministry anticipated in its plan four new construction projects with an estimated cost of 2.1 million rubles and an annual capital investment volume of 681,000 rubles.

Construction schedules expired 2-4 years ago for such carryover construction projects as the gravel screening plant in Przheval'sk and Kantskiy Cement-Slate Combine's pipe-slate production facility, and this trend was not eliminated in 1981. A total of 60,000 rubles was allocated this [1981] year for Kantskiy Cement-Slate Combine's pipe-slate production facility (under construction since 1977, estimated cost of 2.99 million rubles and carryover as of 1 January 1981 of 1.16 million rubles). And its expansion will probably not be completed in the 11th Five-Year Plan. Such cases also are to be found in other ministries and departments of the republic.

Along with this, certain bank institutions (the Issyk-Kul'skaya Oblast office and the Kantskiy department) have permitted acceptance of projects and facilities for financing when less funds have been allocated for their construction than stipulated by the norms and have not taken the necessary steps to curtail construction of projects not included in the plan. Uninstalled equipment reserves are still high. As of 1 January 1981, 21.8 million rubles worth had accumulated in ministries and departments financed by the Stroybank.

The schedules for putting production capacities into operation established in the state plans have not been met in many instances. For example, a 385,000 cubic meter gravel, crushed stone and sand screening plant has been under construction since 1975

in Przhival'sk; estimated cost -- 2,499,000 rubles, including 1,719,000 rubles in construction-installation work. According to the initial titles list, the capacities were to have been put into operation in 1977, which was then moved up to 1981. Given a normative construction period of 29 months, it has been under construction for seven years. The main reason is the failure of contractor organizations to carry out the construction-installation work plan. Due to the length of the construction period, we have already failed to receive 361,000 rubles of profit, as well as 620,000 cubic meters of gravel, 352,000 cubic meters of sand and 113,000 cubic meters of crushed rock.

In the first year of the 11th Five-Year Plan, we are faced with utilizing 767.3 million rubles in capital investments, six percent more than in 1980. In order to make what is planned a reality, we need to achieve a fundamental breakthrough in this most important branch of the national economy.

Comprehensive improvement in capital investment effectiveness, a reduction in reimbursement periods and ensuring the greatest increment in output per ruble spent have taken on special importance. We first of all need to bring the current forms and methods of planning capital construction into line with the needs of a constantly developing republic economy, in our opinion. But the proper coordination has still not been achieved. Capital investment amounts often do not conform to the financial, material and technical resources and capacities of construction-installation organizations and a scattering of funds is permitted, resulting in an increase in the number of projects begun but not completed, and capital investment volume is also growing. Whereas bank institutions financed 1,444 projects with a capital investment volume of 418.6 million rubles in 1976, the figures were 1,581 and 442.2 million in 1978, 1,286 and 442.6 million in 1979 and 1,229 and 447.6 million in 1980.

Beginning on 1 July 1980, four republic contractor organizations were changed over to calculations for commodity construction output. At the end of the year, their general-contractor unfinished production volume was more than 44 million rubles. For these expenditures, they were issued 36.5 million rubles in credit. Moreover, credit was granted for calculations with suppliers for commodity-material values and services for a period of up to 60 days. Given this indebtedness for a limited period, credit was extended for longer than this period from a special account and at higher interest. In 1980 alone, 217.9 million rubles was issued, 23.9 million rubles more than in 1979.

This type of crediting improved the status of calculations with suppliers. Whereas indebtedness for material values and services rendered in file No 2 at the start of the reporting year was 7.4 million rubles, it was 5.9 million by the end of that year, that is, 20.2 percent less. Heretofore, construction-installation work done was covered primarily through client funds temporarily transferred to contractor organizations in the form of advances.

The sphere of credit application is increasingly broad. At the end of 1980, it was 16.8 percent of debt payment sources, as against 8.1 percent at the start of the year. As of 1 January 1981, this has provided an opportunity for the uninterrupted reimbursement of contractor organization expenditures on unfinished construction, intensified stimulation of financial-credit relation towards accelerating the start-up of production capacities and projects. Thus, the Kirghiz SSR Ministry of Construction's Oshstroy DSK [house-building combine] trust systematically availed itself of

credit for expenditures on unfinished production in the reporting year. It built 13 projects (as against 12 planned): two 50-apartment developments were released ahead of schedule, one by three months and the other by four, and so forth. The DSK successfully coped with the plan assignment, the contractor work program was carried out 100.1 percent and the release plan -- 101.1 percent. The republic Ministry of Motor Transport and Highways' Aeroportstroy SMU [construction-installation administration met the plan for releasing projects 102.6 percent.

The effectiveness of loan use has dropped because they are often issued without instructions from the USSR Stroybank Board. As audit materials demonstrate, loans were improperly granted by the Oshskaya and Narynskaya oblast offices and the Kantskiy department. A total of upwards of six million rubles was illegally issued.

In the 10th Five-Year Plan, this office used long-term credit. During that period, 54 enterprises and construction projects received 47.9 million rubles, 39.1 percent of the capital investments for those projects. In the reporting year, a mixed feed shop at the Kalininskiy Grain Products Combine was renovated ahead of schedule in the second quarter of 1980 using long-term credit (planned for the third quarter), with fixed assets of 821,000 rubles and a 19 percent credit share. Kirgizavtomash plant used credit to start up complex No 1, with a production capacity of 3,000 tractor attachments per year worth 13.2 million rubles, with fixed assets of 2.1 million rubles and 4,000 square meters of production area.

The client's responsibility for providing the construction with financial resources remains as before. It is obligated to transfer to the bank on schedule temporarily free funds (to pay for completely finished enterprises and start-up complexes) for use as credit resources to cover expenditures on unfinished construction-installation work. With the change in procedures for calculating and covering expenditures on unfinished construction-installation work, bank institutions must make maximum use of the right granted them to intensify their monitoring of the effectiveness of the expenditure of funds being allocated to pay for equipment and must persistently strive for its prompt release for operation.

The changeover to calculations for commodity construction output occupies an important place in bank institution activity. This office began preparing for it in the second half of 1980. It organized conferences and seminars with bank workers, as well as representatives of client ministries and contractor organizations. They studied the instructions of the USSR Stroybank Board, USSR Gosplan and USSR Gosstroy on this question. In December 1980, the republic Council of Ministers conducted a conference with the leaders of ministries, departments and Soviet of People's Deputies ispolkoms at which questions of readiness to change over to calculations using commodity construction output were discussed.

During the preparation period, contractor organizations and clients jointly inventoried unfinished construction-installation work, adjusted client fund amounts to be transferred to contractor organizations for temporary use and submitted confirmation of those amounts to [bank] institutions. The republic office sent officials to the banks to help them. As a result of the steps taken, 89.5 percent of the organizations changed over to calculations using commodity construction output by 1 April 1981. Some 83.1 percent of the client advances listed with contractor organizations as of that date were replaced by credit. The client funds accumulation plan for the first quarter of 1981 was met by 103.7 percent (43 million rubles, given a plan of 41.5

million rubles). Given an established first-quarter limit of 252.8 million rubles, 205.7 million rubles in loans was issued for unfinished production.

Eleven contractor organizations were not transferred to this form of calculations, five due to the absence of limits. As of now, limits have not been received for two organizations of the Ministry of Meat and Dairy Industry (Soyuzmyasomolmontazh trust's installation-adjustment administration, a PMK [mobile mechanized column] of the Kirghiz SSR Ministry of Meat and Dairy Industry), a PMK of the Ministry of Building Materials Industry, a PMK of the Gosnab and a republic geology SMU. Two organizations were transferred as of 1 July.

We encountered difficulties in this work. The republic Ministry of Rural Construction had transferred the organizations of only one trust to this type of calculations as of 1 January 1981, and the Mezhholkhozstroy [not further identified] -- none. Individual construction organizations of the USSR Ministry of Installation and Special Construction Work, Kirghiz SSR Ministry of Motor Transport and Highways and others have assumed the role of subcontractors for these organizations. Inasmuch as the general contractor has not been transferred to calculations using commodity construction output, advances not covered by bank loans remain with the subcontractor.

The changeover to calculations using commodity construction output has revealed shortcomings in calculations using finished projects or stages, when contractor organizations have received funds for temporary use from clients. At the end of 1980, certain clients had failed to supply funds sufficient to cover expenditures on unfinished production and others had transferred to contractor organizations more funds than work done. When adjusting indebtedness for unfinished production, unsecured indebtedness must be carried over to the overdue loans account.

Overdue bank loans at our office as of 1 April 1981 had increased by six million rubles as compared with the same date last year. But for individual clients, on the other hand, we had to accumulate funds to cover the expenditures of past years through allocations intended for capital investments this [1981] year. According to preliminary data, we will require more than seven million rubles more.

At present, republic bank institution workers are analyzing the feasibility of using sources in capital investment financing plans and are disclosing the sums needed to cover expenditures of previous years which are listed as unfinished construction.

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CONSTRUCTION

HOUSING CONSTRUCTION REVIEWED

Moscow EKONOMICHESKAYA GAZETA in Russian No 47, Nov 81 p 2

[Text] The scope of housing construction in our country is rightfully considered a great social achievement. Beginning with the Eighth Five-Year Plan, more than a hundred million square meters of usable housing space has been introduced each year. In the 1970's, more housing space was built than the entire urban housing supply at the start of the 1960's. At the same time, the technical provision of the housing and its comfort improved. More than half the housing put up in the five-year period used new standard designs with improved lay-outs and apartment finishing.

It should be noted that the improved comfort, large-scale construction in rural areas and the creation of new cities and settlements in Siberia and the Far East required additional expenditures. On average, each square meter of housing now costs the state a little over 10 percent more than at the start of the 10th Five-Year Plan. However, this is not reflected in the scope of housing construction.

We plan to put up a total of 530 million square meters of housing in the 11th Five-Year Plan. The proportion of new standard designs with improved architectural, lay-out and structural resolutions will be 75 percent.

New residents are already able to evaluate the advantages of the new series of houses on their merits as compared with preceding series. There are more utility areas, the kitchens and vestibules are more spacious and the insulation and soundproofing are more reliable.

Standard plans with improved lay-outs and apartment finishing have been developed for each region of the country with consideration of natural-climatic, demographic and national-lifestyle features. Farmstead-type house plans with a complex of additional premises and buildings for private subsidiary farming predominate in series for state, cooperative and individual rural housing construction. There are a total of 1,914 designs in 116 series for urban housing construction and 905 designs in 74 series for rural housing construction.

The task has been set of distributing new state housing space in the 11th Five-Year plan following the general principle of granting each family an individual apartment. In this connection, the Soviet of People's Deputies ispolkoms and their planning commissions must correctly determine an efficient housing construction structure so that industrial house-building enterprises fully and promptly master the production of parts and components for buildings with an optimum complement of apartments for their particular areas.

An efficient housing construction planning structure must take into account the appropriateness of installing particular types of houses, their number of stories, the completeness of the housing development and the potential of local construction industry. Unfortunately, this is being done by no means everywhere. According to Gosgrazhdanstroy data, the structure adopted in Kazan', Orenburg, Novosibirsk, Dushanbe and Yerevan does not correspond to the planned housing construction volumes.

An extensive set of standard plans enables us to put up houses to suit practically any taste using industrial methods. Under these conditions, the extreme increase in housing developments using individual plans in a number of places is unjustified. The cost of such houses is nearly double that of standard ones, and they are built considerably more slowly and with higher labor expenditures. The erection of high buildings in settlements and small cities also has a negative effect on economy of housing construction.

Experience shows that there are no "long-timers" or cost overruns, the release of houses using new standard plans is mastered faster and comprehensive development is ensured when the local Soviet ispolkoms concentrate all housing construction means under a single customer and where a two-year schedule for uninterrupted planning and smooth start-up of housing and civil engineering projects is functioning. Examples would be city organizations and construction workers in Orel, Tallinn, Kalinin, Saratov, Tol'yatti, Shevchenko and Naberezhnyye Chelny.

However, comprehensive flow-line construction based on continuous planning has been introduced at less than two-thirds of the cities with populations of over 100,000. In the 11th Five-Year Plan, we need to complete creation of single-client services everywhere and set up a precise rhythm of housing, cultural and personal-services facility installation.

Industrial and foremost large-panel house-building will receive continued development in the 11th Five-Year Plan as a decisive direction of large-scale housing construction. It has been estimated that, under present conditions, the erection of large-panel houses is nearly 10 percent cheaper than erecting brick buildings.

By 1985, state and cooperative construction will be faced with having increased the proportion of large-panel houses to 65 percent. The network of house-building combines (DSK) and large-panel house-building plants (KPD) will be expanded.

At present, there are about 500 house-building enterprises. Many of them will be renovated or retooled in the 11th Five-Year Plan. The Ministry of Construction, Road and Municipal Machine Building is called upon to provide them with modern, highly productive equipment.

The proportion of housing built following new standard plans with improved apartment lay-out and finishing has increased from 30 percent in 1975 to 57 percent in 1980 and is planned to be 75 percent in 1985.

Enterprises of the USSR Ministry of Chemical Industry and Ministry of the Petroleum Refining and Petrochemical Industry must make a weighty contribution to developing industrial house-building and improving its quality. They must significantly increase the production and expand the assortment of sealants and mastics, durable enamels and paints, economical and beautiful synthetic finishing materials.

DSK's and KPD trusts are concentrated primarily in the systems of the main construction ministries. It is important that the USSR Ministry of Construction of Heavy Industry Enterprises, USSR Ministry of Industrial Construction, USSR Ministry of Construction, USSR Ministry of Rural Construction and Ministry of Construction in the Far East and Transbaykal Regions pay more attention to ensuring a full, efficient load on existing production capacities. Every condition necessary exists for raising their use factor from 0.77 to 0.85 or 0.90. Energetic steps must be taken for the interdepartmental specialization and consolidation of house-building industry within individual cities and regions.

Neighbors often duplicate each others' small series of output as a result of the scattering of efforts by enterprises of different subordination. One plant is extremely overloaded, while the next one has a surplus capacity reserve available. Components are brought in from afar, although their release has been mastered locally by another department.

"Local reports on the start-up of new industrial projects ordinarily do not point out what has been done for those who will work there, how much housing and how many kindergartens, libraries and clinics have been built. Let's agree to consider such reports valid only if the housing, cultural and personal-services construction program for the project has also been carried out as anticipated by the plan." This was Leonid Il'ich Brezhnev's proposal to delegates of the 26th Congress.

The top-priority construction of housing for workers at new enterprises, new regions and rural areas has been outlined in the 11th Five-Year Plan. Sponsor construction workers from all the union republics have earned a good reputation in the young cities and settlements on the Baykal-Amur Mainline route.

Plan assignments are being met and housing is being put up more smoothly in Leningrad and Tallinn, Mariyskaya and Chuvashskaya ASSR's, Orlovskaya and Saratovskaya oblasts. Local contractor organizations, with the support of party and soviet agencies, have set up a precision house-building conveyor. For example, the Glavprivolzhskstroy has ensured the start-up of 71 percent of the year's housing start program in Saratovskaya Oblast in the first three quarters.

Unfortunately, things are not so everywhere. Many contractor organizations are not keeping with housing construction plans. More than 40 percent of the annual start-up volume is generally left for the fourth quarter.

In the USSR Ministry of Construction of Heavy Industry Enterprises' Kabbalkpromstroy Trust, the assignment for the first nine months was met by 73.3 percent and less than 10 percent of the year's housing volume had been put into operation in the first three quarters. The USSR Ministry of Industrial Construction's Kalugastroy administration coped with the nine-month program by 59.2 percent, ensuring the release of 38 percent of the housing planned for the year. The USSR Ministry of Construction's Kaliningradstroy association started up 40.5 percent of the plan for the first three quarters, or 23.1 percent of the annual plan.

According to EKONOMICHESKAYA GAZETA monitoring posts and statistical data, it is obvious that inadequate attention has been paid to housing, cultural and personal-services construction when installing projects at the Tobol'sk Petrochemical Combine and the Ekibastuz fuel-energy complex. Such underestimation of social questions hampers securing personnel at new construction project enterprises.

In Western Siberia, the greatest housing construction lag has been permitted by enterprises and organizations of the USSR Ministry of Petrochemical Industry, Ministry of Chemical Industry and Ministry of Gas Industry; in the Far East -- USSR Ministry of Fish Industry; in the Nonchernozem Zone of the Russian Federation -- USSR Ministry of Fruit and Vegetable Industry and USSR State Sel'khoztekhnika Committee.

The party's demand that social questions be examined on an equal footing with basic production activity must be met by all economic leaders in the 11th Five-Year Plan and must be kept constantly in view by enterprise and construction project party organizations.

Housing accounts for a fifth of the value of all the country's fixed assets. Saving this enormous wealth is the duty of each Soviet person. The state invests about five billion rubles annually in maintaining the housing economy. Apartment payments made by the population do not cover even a third of state expenditures for these purposes.

Let us recall that payments for the use of apartments and municipal services do not exceed three percent of the worker family budget. The amount has remained unchanged for more than half a century now and is the lowest in the world. This blessing must be prized, and we need to develop in every way possible the movement to ensure socialist housing protection. The USSR Constitution points out that, along with the right to housing, there is a concomitant duty of citizens to care for their housing. This was secured in the USSR and Union republic "Housing Legislation Principles" adopted at the last USSR Supreme Soviet session.

At the same time, there have been quite a few justified complaints against builders by new residents concerning poor work quality and unfinished work, although steps being taken to improve the economic mechanism are oriented towards putting only completely finished projects into operation. Quite a few new buildings need repairs prematurely. Serious incompletions have been revealed in the heating systems at projects of the Vladimirskiy construction administration. According to Zhdanov and Makeyevka city housing administration data, joints leaked in 27 houses released by organizations of the USSR Ministry of Construction of Heavy Industry Enterprises. The Smolensk'sel'stroy administration "forgot" to align the window hinges and doorways, testifying not only to poor construction-installation work quality, but also to a lack of principle in members of the given acceptance commissions, which are generally designated by the gorispolkoms. Those who gave their "okay" to work they knew was defective must be called strictly to account.

Success in carrying out the housing program of the 11th Five-Year Plan will depend on the joint fruitful efforts of local party and soviet agencies, ministries and client departments, construction workers and planners. Carrying out the tasks set by the party and government will become a major new step forward on the path of further improving the well-being of the Soviet people.

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CONSTRUCTION

HOUSING CONSTRUCTION IN SIBERIA EXAMINED

Moscow ARKHITEKTURA SSSR in Russian No 10, Oct 81 (signed to press 18 Sep 81) pp 60-62

[Article by Candidate of Architecture V. Khakhulin: "Housing Developments in Siberian Cities"]

[Text] The resolutions of the 26th Party Congress outline large-scale economic programs for Siberia. Among them are: utilization of the petroleum and gas regions of the Ob' area of Tyumenskaya Oblast, the BAM zone, development of the Kuzbass and Kansk-Achinsk fuel and energy complex, the Angara-Yenisey cascade, using the resources of Lake Baykal and the water resources of Siberian rivers. This is being accompanied by rapid growth in the large cities, by the intensive construction of new cities and settlements under the different natural and climatic conditions of this region. Some 470 urban settlements have already been created in Western and Eastern Siberia (including 128 cities in which about 15 million people, or nine percent of the total urban population of the country, now live), and the number of urban settlements in Siberia is increasing by 1-3 annually.

The urbanization process in Siberian regions is distinguished by high rates of growth in the urban population, by centralization and monocentric forms of settlement: the proportion of large cities is 18 percent and of small and medium-sized cities -- 82 percent in Siberia, while the ratio is 14 to 86 percent for the RSFSR as a whole; the urban population is approaching 70 percent in Siberia.

Intensive growth in the large cities of Siberia and their zones of influence is to be explained not only by social and economic conditions, but also by the fact that the centers of construction industry are concentrated here, providing entire regions with building materials and items for industrial construction and putting up housing and public buildings.

At present, the general direction of Siberian urban housing construction is large-panel house building, which is now 50 percent of all housing construction (70-90 percent in some cities). In Western and Eastern Siberia and the Far East, there are a total of 52 large-panel house-building bases with a total capacity approaching six million square meters of housing per year. This house-building base unquestionably does not meet the needs of Siberia's economic development, and series using local materials and imported items also find broad application in construction practice. All this increases construction costs at least two-fold and does not always meet the demands of development comprehensiveness, which is of special importance

in the remote and newly mastered regions, and it leads to uncontrolled growth in the number of series being used in housing development in the cities and settlements.

In 1980, housing developments in Siberian cities and settlements used 101 standard design series developed by dozens of design institutes for both Siberia and other regions of the country. In this regard, 30 of the most widely used series (both old and new) cover 95 percent of all state construction in Siberia, while the remaining 70 series cover less than five percent. Among the most widely used series are the large-panel house-building veterans, given with percentages of construction volume: 1-464A -- 16, 1-447S -- 17, 1-464D -- 14. Moreover, total construction volume using the new 97, 131, 90, 85 and 83 series thus far approximates 20 percent of the annual urban housing starts. (On average for the RSFSR, 60 percent of the large-panel house-building enterprises have already switched over to the new series.)

The transition to the new series in Siberia lags behind the country's central regions, which is associated in a majority of instances with difficulties in reoutfitting when renovating house-building enterprises and with inadequate preparation of the planning base for work using the interlocking-unit method which has been used with new series since 1971. The interlocking-unit products list is being mastered slowly, which is reflected in large-scale housing development quality and which leads to development uniformity.

Interlocking-unit housing developments meeting the requirements of city-development and demographic maneuverability have thus far received limited dissemination in the Siberian zone. At the same time, a number of local grazhdanproyekt [not further identified, probably "civil engineering planning agencies"] have already accumulated work experience using this method, which is being introduced most actively together with the 97 series developed at SibZNIIEP [Siberian Zonal Scientific Research Institute of Modular and Experimental Residential and Public Building Design] by the author's collective, under the leadership of M. K. Pecherin. Use of interlocking units from other new series is thus far about five percent of city housing developments.

Krasnoyarsk is a leader in using the interlocking-unit method and the 97 series in Siberia, using housing in this series since 1971. The Krasnoyarsk house-building base has mastered the entire series-97 products list, consisting of five- and nine-story houses and interlocking units, 12- and 16-story houses, dormitories and housing for small families. Krasnoyarskgrazhdanproyekt planners are using them successfully in city housing developments.

The Altaygrazhdanproyekt Institute (Barnaul) has experience deserving attention in creative utilization of the interlocking-unit planning method. It has worked out its own interlocking series-97 units which correspond to the potential of the local base and the demographic situation.

The creative ties between SibZNIIEP planners and other planning and construction organizations of Siberia open up good prospects for introducing the 97 series in different regions of the zone and using it in housing developments in Novokuznetsk, Kemerovo, Prokop'yevsk, Barnaul, Ust'-Il'msk and Bratsk. Enterprises of Novosibirsk, Blagoveshchensk and Omsk have already begun mastering it. The series is even being utilized by cities outside the SibZNIIEP zone of influence (Chelyabinsk, Miass, Sverdlovsk, Dzhezkazgan).

Unfortunately, not all Siberian house-building enterprises possess the reserves to fully utilize the new series, and average series utilization in the zone is 55 percent, which cannot but impact the quality of large-scale housing development in Siberian cities. It is especially difficult to introduce these series in new regions of Siberia with an uncoordinated or small base. A significant portion of RSFSR contracting is now being done in Siberia, although the local base is capable of meeting these needs by only 80-85 percent. Siberian construction base development capital investment plans are frequently not carried out, since their implementation is the province of dozens of different ministries and departments.

The housing stock of Western and Eastern Siberia is now about one-tenth of the RSFSR housing stock. In this regard, the largest-scale development is five-story houses, which comprise up to 50 percent of the total urban housing construction volume, while nine-story houses comprise 5-10 percent.

In view of the actual possibilities and prospects for developing large-panel house-building as the basic direction in housing construction, the development of other, additional types of industrial house-building is required in Siberia to cover the housing deficit. Thus far, only Khabarovsk is participating in the unionwide experiment in interlocking-unit house-building.

A considerable portion of Siberia and the Far East is land with high seismicity (7, 8 or 9 points) and in some regions (especially the BAM zone), seismicity is combined with permafrost, which places a number of rigid limitations on building structural and architectural-planning resolutions. These are regions of Sakhalin, the Kuriles, Kamchatka, Buryatia and Tuva and the BAM impact zone, where small, medium-sized cities and settlements are being developed especially intensively. Construction in these regions is also complicated by the inadequately developed construction industry base, in which connection housing development is being done here using primarily local and imported materials. Under these conditions, brick and local-materials series are large-scale housing development.

In addition to series developed by central institutes, the 114 series, which was developed by Siberian designers, has come to be used in housing developments using local materials.

SibZNIIEP Institute has worked out three variants of this series for Siberian city and settlement housing developments: one for Kamchatka (seismicity 9 points); one for Sakhalin, Buryatia and the BAM (seismicity 7-8 points), with subdivisions using brick and large modules; and one for Northern Sakhalin (a series using northern novatives -- building height of three meters and larger apartments).

The first stage in utilizing the BAM impact zone is to be the development of about 1.5 million square kilometers immediately adjacent to the route. More than 70 institutes of the country have worked out plans for laying out and developing cities and settlements and standard and experimental housing and public building designs. In this regard, we anticipate the use primarily of low buildings for different engineering and geological conditions. To this end, the central and zonal institutes of the Gosgrazhdanstroy have developed comprehensive housing and public building series. Thus, the LenZNIIEP worked out the 122 series for the eastern BAM sector; it is being utilized by the Shimanovskaya Station house-building combine. The 135 series was developed for the western sector and is being produced in Tayshet. These

are large-panel series which will determine the development of nearly half the settlements on the BAM route. Monolithic, large-unit, wood and brick houses will be used in developing the remaining settlements.

SibZNIIEP Institute has worked out two series 204 variants using local materials for ordinary ground conditions and where permafrost and seismicity of 7-9 points occur together. This series is already being widely used in the BAM settlements of Niye, Kicher, Tayur and Kunerm.

In addition to construction using local materials and brick, industrial wood house-building is also promising for Siberia, enabling us to solve the problem of low housing.

Low, mobile and stationary buildings are needed for the new industrial regions. This type of house-building could become widespread in small cities, suburban zones of large cities and in developing rural population centers. According to SibZNIIEP research results, a comprehensive experiment is underway in Western Siberia along a number of structural-technological lines of wood house-building development. A plan has been developed for the Far North in Western Siberia for an experimental two-story wood house; there are two variants: one using large panels and one using interlocking units transported in packets (architects V. Antonov and A. Sabirov, designers V. Rozhdestvenskiy and S. Zezyulina).

The large-panel house variant has already been built in Salekharde, which is building an enterprise to produce such buildings for regions of the Far North. A portion of a house using two-story folded components has been manufactured and tested at the SibZNIIEP experimental base. The institute is using it as a basis for developing a complete series of buildings using folded wood components for the pioneer regions of Siberia.

Another version of wood house-building development will be tested in petroleum regions of the Ob' area. The institute has worked out proposals for a series of mobile housing units using interlocking-unit wood components for those conditions. A prototype housing unit has been developed and tested at the SibZNIIEP base and is being readied for operational tests in Tyumenskaya Oblast, which plans to create a base for producing these units.

In southern Western Siberia, construction of a plant to produce fully prefabricated wood Roskolkhozstroyob'yedineniye houses is being completed in Novoaltaysk; it will produce one- and two-story large-panel wood houses for housing developments in the villages of Altayskiy Kray.

A similar enterprise has already begun operations in Eastern Siberia. The Krasnoyarsk Industrial Building Components Combine will produce complete housing and public building series for new regions. The Nizhneudinskiy Stock Buildings Plant is producing a series of container-type buildings for BAM regions. Moreover, we anticipate reorganizing a number of enterprises in the Siberia and Far East area to produce items and components for low buildings.

In view of the fact that the proportion of low housing developments will remain at the same level in Siberian settlements in the future, a number of city development, typological and structural questions concerning this type of housing construction

require resolution. This is connected with determining the size of small settlements, with seeking out a model and structure for the low housing complex, housing group, types of houses and apartments for various regions of Siberia, and with questions of organizing the production and installation of such buildings.

The search for promising types of large-scale housing and new methods of shaping housing developments is also underway in the large cities of Siberia. Experimental-demonstration regions taking into account the opportunities and prospects for developing the local planning and construction base are being built in such cities as Novosibirsk, Novokuznetsk, Kemerovo, Irkutsk and Karaganda. Old, as well as new, series are used in their development, and the prospects for developing local house-building bases testify to the fact that the process of replacing old series with new ones may be delayed in Siberia. Nonetheless, the search is already underway for the most promising types of housing.

Thus, comprehensive utilization of the 97 series in Krasnoyarsk has created conditions for conducting an experiment in this city on the next large-scale construction stage. Based on scientific research results, the SibZNIIEP Institute worked out an experimental housing complex plan, including public service elements, for 1,500 residents (architects M. Pecherin, V. Proshlyakov and T. Zhuravskaya), which the Glavkrasnoyarskstroy is beginning to build. The features of large-scale urban housing in the 1990-2000 period will be developed from this house; they will be the basis for developing a new generation of standard design series. One fundamental distinction of this housing from those in use in large-scale practice today is the inclusion of cultural, personal-services and public elements which normalize the social life of the population and reduce time spent on housekeeping. The structure of the housing includes an order counter, cafeterias, a communal kitchen, a baby-sitting room, drop-off points for laundry, dry cleaning and the personal-services combine, and an area for circuit-type services. In addition, a Siberian steam bath is built in, which will help harden the Siberians and protect them from a whole series of common illnesses (grippe, radiculitis, and so forth). In order to resolve a whole series of technological and design questions connected with mastering new items of the series, the Glavkrasnoyarskstroy has initiated a construction experiment: using the SibZNIIEP plan, Krasnoyarsk is installing a 160-apartment section of the housing complex to check out new types of apartments for the next stage.

Novosibirsk has conducted an experiment on the optimum type of soundproofing for houses. The country's first soundproofed house was put into operation in 1977 (chief architect M. Pecherin, scientific research leader Candidate of Architecture Yu. Okol'nichnikov). Physical studies showed that a substantial reduction in noise level was achieved in the apartments just through architectural and lay-out resolutions. Using the results of this experiment, the SibZNIIEP is developing soundproofing interlocking units for the 97 series which will be suitable for housing development in cities with heavy traffic.

The search for heat-saving types of housing takes on great urgency in this stage of large-scale construction in Siberia. Based on research done at the SibZNIIEP, designers are beginning to develop experimental heat-saving houses. Along with the development of such houses and interlocking units for the 97 series, similar houses are being developed for the 72 series in use in developing Tuva cities.

This series could already be the basis for an experiment to find types of large-panel heat-saving houses and interlocking units, since its architectural and lay-out

resolutions anticipate a 5-6 percent reduction in heat expenditures through an increase in the width of the frame to 13-14 meters.

In the near future, we plan to hold a second round of experiments based on this series to find heat-saving types of apartments, optimum kitchen and staircase resolutions, including secondary and overhead lighting. Planning norms for such houses will be worked out and appropriate adjustments made in the construction norms and rules for current and long-range construction on the basis of this experiment.

Siberian housing construction is gradually eliminating obsolete housing series and ones which do not conform to local conditions. By 1990, we anticipate having changed over all of Siberia to the new series. This changeover will be completed together with the renovation of the main construction industry centers, which will create a material base for using progressive architectural, lay-out and design housing development resolutions and will ensure feasible conditions for transforming the lay-out structure and imparting individuality to the cities of Siberia.

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CONSTRUCTION

PROGRESS IN RURAL CONSTRUCTION DISCUSSED

Housing Construction in Kherson

Moscow KRASNAYA ZVEZDA in Russian 13 Mar 81 p 1

/Article: "Large-Panel Houses in the Village"7

/Text7 Kherson. Housing construction in the villages of the oblast has received a reliable industrial base. In Novaya Kakhovka the first rural large-panel housing combine in the oblast has been put into operation. Its capacity is nearly 70,000 square meters of housing space per year.

The chief of the production administration of Kakhovsel'stroy, A. Tokar', said, "the completion of the new enterprise will help us to fulfill the task established by the 26th Party Congress and to carry out the construction in the village of well-equipped housing units at a rapid pace." New opportunities for the rapid construction of multi-storey buildings and the assimilation of the construction of cottages of a new series with caretaking facilities are now available.

In the 11th Five-Year Plan the collective of the administration will increase the amount of rural construction by 20 percent.

Improvement in Rural Construction

Moscow BYULLETEN' STROITEL'NOY TEKHNIKI in Russian No 6, Jun 81
(signed to press 23 Jun 81) pp 39-41

/Article by M. F. Lisovskiy, candidate for the degree of doctor of economic sciences: "Improving and Developing Industrial Construction in the Village"7

/Text7 The specific nature of housing construction in the village consists of the fact that it is dispersed and far from the large construction industry enterprises and that it requires the use of light structures that have largely been assembled at the plant. These requirements are fully met by structures that are manufactured out of wood. A comparison of the technical-economic indicators of designs for wooden and reinforced concrete panel houses shows that the wooden houses

are lower in estimated cost of construction and labor intensiveness of the work. Wooden panel houses are several times lighter than the reinforced concrete ones, which reduces expenditures for transporting articles and makes it possible to use installation cranes with a small lifting capacity for erecting the houses.

In order to economize the use of wood, reduce the labor intensiveness of manufacture and to improve the operating quality of buildings it is necessary to switch to the use of plant-manufactured wooden houses. The further creation of industrial production associations is planned. These associations will specialize in the manufacture of industrial housing units on the construction conveyor principle. This production capability is to be organized at associations in the Chuvash, Mordova, Kostroma, Gor'kiy and several other autonomous republics and oblasts.

Particular attention must be given to the production and use of structures made of arbolit, the effectiveness and competitiveness of which has been founded and demonstrated. Supplies of wastes from lumbering operations, wood-working and agricultural production, which are used as a filler, are unlimited. The excellent cohesion of arbolit with various textured layers and paint and varnish coverings makes it possible to produce beautiful manufactured articles with a high preassembled readiness.

Within the Roskolkhostroy /RSFSR Kolkhoz Construction Trust/ system comprehensive efforts are underway to organize the production and adoption of arbolit in rural construction practice. The excellent heat and sound insulating properties, the biostability, the refractoriness, light weight, simplicity of production, and the relatively inexpensive cost make it possible for arbolit to successfully compete with brick, cinder blocks and light-weight aggregate concrete. The more extensive use of an article made of arbolit has been in the construction of single and two-storey housing units, administration, agricultural and industrial buildings in Krasnodar and Krasnoyarsk krais, Arkhangel'sk, Gor'kiy, Kaluga, Orel, Saratov, and Poltava oblasts. Arbolit has performed well in the conditions of Yakutiya, Siberia and the Polar regions.

In order to centralize scientific-research and planning and design work on the use of lightweight concretes, arbolit and new construction materials the planning-technological production association Sel'stroy-materialy /rural construction materials/ has been created in Saratov. Here work is underway in accordance with the long-term plan for the technical development of industrial materials of Roskolkhozstroy and measures for expanding the production and use of arbolit in construction, which was approved by the USSR Gosstroy and the USSR Gosplan. Enterprises for producing arbolit with a total capacity greater than 100,000 cubic meters are now in operation in 10 kray and oblast associations (Volgodonsk, Gor'kiy, Kursk, Krasnodar, Sverdlovsk, Krasnoyarsk and Yakutsk and others).

In Gor'kiy oblast more than 700 construction projects for different purposes have been built out of arbolit; this includes 225 housing units and agricultural projects made out of arbolit. The Kray

Kolkhoz Construction Association has built more than 200 housing units and agricultural construction projects from arbolit. The Sverdlovsk Oblast Inter-Kolkhoz Construction Association built 200 buildings. More than 100 multi-purpose buildings made of arbolit have been put into use in Saratov Oblast: 24 cow-sheds, 3 hen-houses, 7 sheep-folds, 15 stores, 16 housing units and several other construction projects. The Giprostroymash Institute and the association have devised a technological line for the production of structures made of arbolit. Research on the physical-mechanical properties of arbolit based on various organic fillers and bindings have made it possible to expand the area of locating the production of arbolit in the oblasts of the non-chernozem, Siberia, and the Far East.

The product list of construction structures made of arbolit, which was developed by the Giprostroymash Institute and the Sel'stroymaterialy /Rural construction materials/ Association, ensures the maximum full assembly of production buildings and housing units. To increase the quality of plant assembly and to improve the esthetic appearance of manufactured articles in the designs of two-storey duplexes with apartments in two levels for experimental construction they have envisioned a technology for finishing with decorative, glass-like crushed stone based on low-melting clay, colored thermolite opoka-like crushed stone, and glass ceramic.

Experience in the production and use of arbolit structures shows that this effective construction material is increasingly catching the attention of rural construction workers. In the Roskolkhozstroy Association a target program by the name of "Arbolit" has been approved. According to this program in 23 associations the construction of new and the modernization of existing shops and plans will result in bringing the capacity for producing industrial arbolit structures, chiefly for the construction of housing units, up to 470,000 cubic meters per year. This will make it possible to build 6,000 single estate-like apartment units out of arbolit each year.

The Sel'stroymaterialy Association and the TsNIIEPgrazhdansel'stroy /Central Scientific-Research and Economic Planning Institute for Civil and Rural Construction/ are devising a series of standard designs for housing units, childrens' institutions, civil and public buildings made of arbolit structures for the comprehensive building of the village. "Guidance on the selection of rational construction systems of buildings for mass construction in various conditions" has been drafted. The "guidance" contains the basic methodological solutions and recommendations for selecting the designs of houses.

Fully pre-assembled house building is preferred in places with a mass infrastructure, which is being undertaken by large contractor organizations, when there is a developed road system, and also in the suburban zone of large cities. It is also feasible in far-flung, newly developing regions of Western Siberia and the Far North. In regions of dispersed construction it is wise to use local construction materials (including brick) in combination with industrial structures. Raising the efficiency of construction in this case can be achieved by using industrial coverings, ceilings, partitions, floors and others made of light efficient materials and the use of light-weight masonry.

In switching from the construction of fully-preassembled buildings in densely populated zones which have a well-developed network of roads to the mass construction in isolated regions it is possible to reduce profitability of existing enterprises manufacturing preassembled reinforced concrete. In this connection the search for the interconnection of fully-preassembled construction with the degree of its concentration becomes an urgent concern. Also of concern is determining the optimal capacities and locating of the enterprises, which service the dispersed construction.

A study of the capacities of rural house building enterprises shows that it is not always profitable to increase their size. The designing capacities must be coordinated with the distance of the transshipping, the condition of the roads, availability of transport means, and the possibility of organizing construction by the flow-line method. For some oblasts in the North and East of the Soviet Union with an insignificant population density it is expedient to create cooperative comprehensive enterprises for different ministries and departments.

In connection with a change in the organization of agricultural production and its transfer to an industrial base, the nature of rural construction has become qualitatively different. There has been a change in the established concept of the types of agricultural production enterprises as of the small in capacity and productivity buildings with a low level of mechanization and automation of processes, being constructed out of inefficient, small size construction structures and articles.

Now they have developed standard designs for agricultural production complexes for feeding hogs at 12,000, 24,000, 54,000 and 108,000 head per year, dairy farms for 800 and 1,200 cows, complexes for feeding the calves of horned cattle at 10,000 head per year, hot-house combines, designs for storage facilities for agricultural produce in large amounts. In comparison with the old designs, the new standard designs call for increased capacities of enterprises on a 2 to 6-fold scale. All of this has made it possible to significantly improve the technical-economic indicators of the agricultural enterprises that are being built.

The process of further specialization and concentration of agricultural production ensures a more efficient directing of capital investments. The development and improvement of the types of agricultural enterprises is taking place in the creation of production complexes. This will include enterprises for the production, storage and initial processing of product, which have been combined with housing and civil construction projects and enterprises for the use of agricultural raw materials. These are the prototypes of the agro-industrial centers.

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Construction in Tyumen' Oblast

Moscow IZVESTIYA in Russian 18 Jul 81 p 2

/Article by A. Otradnov, chief of the administration for construction affairs and architecture of the Tyumen' Oblast Executive Committee: "Building with the Future"/

/Text/ The Tyumen' north is developing at a rapid pace. During the years of the 10th Five-Year Plan alone 25 billion rubles of capital investments were assimilated. New capacities were put into operation for the extraction of petroleum and the processing of gas. Dozens of important national economic construction projects were completed. The residents of the oblast received 6.5 million square meters of housing. New cities and settlements appeared on the vast map of our region.

The construction of a city is never a simple process. And in conditions of the far north, of poor roads and of an unprecedented influx of population, such an undertaking takes on special complexity.

For an example I use the present center of the gas industry - Novyy Urengoy. The general plan for this city was drawn up by the Moscow Giprogor Institute in 1974. Originally the plan called for a population of 30,000. Only five years later it was necessary to adjust the plan to 70,000. But again life led to a correction. Now we are speaking about a population of 100,000 people. Each year the population of Novyy Urengoy increases by 10,000 to 12,000 people.

The designers clearly are not keeping up with time. The LenzNIIEP and Giprogor institutes were to have created by the end of last year a new general plan. However, this undertaking has been delayed for no good reason. Meanwhile, construction is proceeding at full steam. In Novyy Urengoy the first 9-storey apartment buildings are going up. This year they plan to complete nearly 220,000 square meters of housing space.

The layout of the general plan is urgently needed here to resolve questions on the engineering support and the siting of land for future housing construction. More than one and a half years have passed since the LenzNIIEP became the general designer for Novyy Urengoy, but its influence has yet to be felt. The institute is only performing an "attachment" of the housing units and is late in providing the client with documentation, excusing this action by saying that it does not have enough limits, although the gas industry people have already allocated the funds, which are not being assimilated. So far the working design group has not been formed. It is time for the State Committee for Civil Construction and Architecture to require the institute not to slow the work of the builders.

The railroad lines that have been laid through the taiga and tundra from Surgut to Nizhnevartovsk and Urengoy have crossed several large

deposits and have had a noticeable affect upon the growth of new populated areas. Some railroad stations have been converted into large worker settlements, which have become support base centers for the oil workers, gas workers, geologists and power workers. In the near future settlements in the Khanty-Mansiysk Autonomous Okrug will receive the status of a city. Pyt'-Yakh, Kogalym, Nyagan', and Langepas are some of the settlements that will become cities. In order to locate the workers and specialists close to the oil and gas fields, it is planned to construct 15 new large populated points. Each of these settlements will contain from 20,000 to 80,000 residents.

During the present five-year plan it is planned to build 11 to 12 million square meters of housing space in Tyumen' Oblast. In just the years 1981 through 1983 we will get new preschool childrens' institutions for 24,000 students and schools for 30,000 students and many other cultural and social facilities. This means that a great deal of designing and surveying work must be done within very compressed time periods. Toward this end the leading city designing institutes of the Soviet Union have been brought in on the work.

The collective of the Chelyabinskgrazhdanproyekt Institute /civil design insitute/ has started to design the layout around the Pyt'-Yakh railroad station. In spite of the complicated situation, which has evolved because of the industrial bases, railroad approaches and other communications that were located here previously, the Chelyabinsk designers have managed to find a solution, which was highly evaluated by the interdepartmental commission that was created by the Tyumen' Oblast Council of Peoples' Deputies. There is confidence that the new city will become one of the most beautiful and well-equipped cities here in the north.

The architects are working diligently to improve the appearance of Tyumen' Oblast cities. For example, after completing the architectural formulation of the embankment, Nefteyugansk turned its new facade toward the Ob' River. The original complexes comprised of so-called closed units are creating a favorable microclimate in Nadym. The ancient Siberian cities of Tyumen' and Tobol'sk have changed beyond recognition and have become modern.

A significant place in the work of the councils of peoples' deputies is now being occupied by questions having to do with strengthening the control and more active influence upon the course of construction of the new cities. Problems connected with their layout and the positioning of housing and cultural and social facilities are being reviewed in sessions of the councils and the executive committees and in standing commissions. Deputy posts are functioning at the key construction sites.

A year ago in Tyumen' Oblast a visiting committee of the RSFSR State Committee for Construction Affairs and the USSR State Committee for Civil Construction and Architecture reviewed, and after coordinating

with the Tyumen' Oblast Executive Committee and the appropriate ministries, approved measures for improving the architectural appearance of cities and improving the quality of the construction of housing units and social and cultural facilities. The business meeting of the representatives from the interested organizations were clearly useful.

But here is what concerns us. In laying out the new populated points in places where they are searching for and extracting the underground wealth, as before a single architectural style is dominating; this is delaying the formation of public centers, city squares and main roads. The housing microregions are almost always being built separately rather than as an integrated system: the builders are leaving "for later" the social and cultural facilities, the services and utilities and the landscaping. Glavtyumenpromstroy /Main Administration of Industrial Construction in Tyumen' Oblast/ insists on sending to Nizhnevartovsk and Tobol'sk prefabricated buildings that are out of date, without taking into consideration the local climatic conditions.

The quality of construction and installation work is improving slowly. Materials and manufactured articles, which are being delivered by Glavtyumenpromstroy and Glavtyumenneftegazstroy /Main Administration for the Construction of Petroleum and Gas Industry Enterprises in Tyumen' Oblast/, are of a poor plant readiness and according to many indicators they do not meet standards. Construction projects are frequently accepted with unfinished work and without the completion of services and utilities for the surrounding territory.

One of the reasons for this, of which I spoke already, is that the new cities and settlements are being built without general plans, which have been in the process of being coordinated with various departments for a long time. In such a situation it is simply necessary to have an operational group of planners, which within a short period of time on the basis of available surveys could outline precisely what needs to be done, having compared them with the future general plan.

Now in Tyumen' Oblast it is necessary to switch from the limited planning of individual cities and settlements to a systematic, group development of regions, using as a basis the displacement of a large unit such as the industrial association. This will promote the rational locating of new enterprises and other facilities which form cities; it will also promote the more efficient use of labor and territorial resources. In doing this it is necessary to consider the availability of transportation, raw material bases and the possibilities of creating good conditions for labor and recreation.

More than 80 institutes are preparing design documentation for the industrial and civil construction in Tyumen' Oblast. As emphasized at the 26th Party Congress, it is necessary that this work be conducted at a high level, using progressive and economical designs which correspond to modern requirements. This is why the representatives of

the design institutes must see to it that they do not limit themselves to collecting materials in the oblast center. They must deeply analyze the intereconomic ties of the northern regions and study the prospects for their development and on this basis design the new cities where the trailblazers of the oil and gas fields must live and work. These trailblazers have created the Soviet Union's main fuel and power base in this severe kray.

Rural Construction in Georgian SSR

Tbilisi ZARYA VOSTOKA in Russian 7 Aug 81 p 2

/Article by N. Lagidze, chairman of the Village Architecture section of the Union of Architects of the Georgian SSR, candidate for the degree of Doctor of Architecture: "A House in the Village"7

/Text7 Rural construction has its own specific features. The dispersed nature of the projects, their distance from production bases, the poor development and unsatisfactory condition of roads, and the shortage of specialized transport and installation equipment are now coming into clear contradiction with the economic requirements of industrial house building in the Georgian SSR.

Raising the profitability of producing structures requires the concentration of production capacities. Naturally long distance transport increases the cost of manufactured articles by a considerable amount - almost a 2-fold increase for a 50 to 60 kilometer shipment. Ultimately, such articles become non-competitive with local materials. It is economically disadvantageous to transport manufactured articles of a large size: practice demonstrates that they have to be basically re-assembled in place, which negates any gain in labor expenditures obtained at the plant. The problem of standardizing manufactured articles is significantly complicated by the large typological diversity of rural housing and public buildings.

In this regard it is difficult to overevaluate the importance of large panel house building. In rural housing construction in the Soviet Union large panel house building occupies a comparatively high percentage; in the Georgian SSR it does not exist at all. And this cannot be tolerated: for large panel house building makes it possible to construct significant amounts of housing and cultural and service-related buildings within compressed time periods. Experience in the use of large panel house building in rural construction in the RSFSR, the Ukraine, Belorussia, Kazakhstan and Moldavia convincingly prove its merit. Large panel house building must be developed, taking into consideration the specific features of rural construction. Deserving of attention is the use of multi-layer (strip) panels. Such panels do not have built-in windows and doors and are easier to manufacture at enterprises that have a small capacity. They are especially convenient for

the autoclave production technology. The maximum weight of the installation elements or buildings in such cases usually does not exceed five to six tons. In addition, in the multi-layer sectioning of walls the standardization of the articles for housing and public buildings is significantly simplified.

Large panel buildings with a by-storey sectioning of walls are characterized by an increased plant readiness. The weight of the elements in such buildings can reach 8 to 10 tons. Labor expenditures for the construction of two to four-storey large panel buildings are 1.5-fold less than for the construction of brick buildings. The weight of the buildings is also significantly reduced. This is achieved by the comprehensive use of light concretes and results in a reduction in transport costs by approximately 1.5 rubles per square meter of housing space (per 50 kilometers of shipping).

Thus, the advantages of constructing large panel housing units with the multi-layer (strip) sectioning are apparent. It is thought that this must serve as a convincing argument for the extensive use of this method in various regions of the Georgian SSR.

During the construction of rural housing units the volumetric elements provide the highest degree of their pre-assembly. In the Soviet Union the building modules in rural construction are used on an experimental basis: in the RSFSR, Ukraine, and Belorussia there are operating forming lines, which manufacture light-weight concrete building modules, for which several designs of one and two-storey housing units have been developed. Deserving of our interest is the experience of erecting of low-level construction projects using building modules, which was proposed by the Georgian SSR Ministry of Health. However, all of this only amounts to timid steps. The development of modular housing construction in the village is hindered by the unsatisfactory condition of the roads and the lack of special means of transport and lifting mechanisms. The organization of the appropriate production base takes on significance in this regard, which, of course, requires large expenditures. For this reason the construction using modular units must be accomplished on an already existing basis and, basically, according to available designs, which must first be subjected to an experimental check.

The main attribute of large panel modular house building is the relative simplicity of producing the large modules. It can be organized at existing plants, which produce reinforced concrete structures and wall materials. The relatively small weight of the installation elements in large panel modular buildings makes it possible to install them with light-weight lifting cranes. The large panel modular construction significantly increases the possibility of using identical articles in housing and public buildings, which simplifies the creation of a comprehensive series of one and two-storey buildings.

The development of designs for using industrial methods to construct rural housing units out of slab concrete is a matter of urgency today. The adoption of slab house building makes it possible to use low grade concretes based on local light-weight fillers in rural housing construction. This improves the operating qualities of buildings and cuts down on the use of steel by diminishing the need for reinforcement rated for dynamic, transport and installation loads. In addition, slab housing construction makes it possible to raise the quality of architectural solutions of the layout of rural settlements.

Taking into consideration the fact that individual construction in the villabe is fully based on local materials and that two thirds of the materials used in state, cooperative and kolkhos construction come from local resources, the importance of improving the design solutions of housing that is designed on the basis of local materials becomes clear. A significant reduction in labor intensiveness and cost of constructing the outer walls as well as the savings in brick, cement and wood can be achieved by adopting the use of bricks with many holes and light-weight masonry with the extensive use of wood parts that are plant manufactured, and smoke and ventilation modules made of fire-resistant concrete and so forth.

There is no doubt but that asbestos-cement structures must be used more extensively in rural construction. Such structures with a wooden housing have now been developed and approved on an experimental basis.

The rapid growth in the production of synthetic resins, plastics, aluminum and other effective materials is putting on the agenda the question about their use in rural housing construction. The use of such materials can become very effective for seasonal and temporary types of housing units, which are located in the hard-to-reach and sparsely populated mountainous regions of the Georgian SSR.

Construction in the Non-Chernozem

Moscow SOVETSKAYA ROSSIYA in Russian 1 Aug 81 p 1

/Article: "Non-Chernozem Construction Projects"

/Text The Non-Chernozem is a vast region of Russia. Here are Moscow and Leningrad, the industrial cities of the Urals and the Center, and the leading enterprises of many industrial sectors. Within this territory live a significant portion of the population of the Russian Republic. In order to reliably supply the cities with food and to provide the factors and plants with the needed agricultural raw materials and to ensure the comprehensive development of the entire economy of this region a powerful production base is being created.

For many reasons this region is in conditions that are more difficult than many others. The CPSU Central Committee and the Soviet government have planned and are accomplishing extensive measures for the development of the Non-Chernozem. According to L. I. Brezhnev, this task is

so complex and urgent that it must be solved through the joint efforts of all republics and within a short period of time as possible.

In the 11th Five-Year Plan the volume of capital investments directed toward this goal will be increased by 26 percent. No other single comprehensive program and no other region has received such a significant increase in funding. Such is the specific expression of the exceptional attention, which is being given to the development of the Russian Non-Chernozem. This means that those who have been given the task of carrying out these grandiose plans and assimilating these enormous state investments must approach their job with a greater sense of responsibility. How is this task to be solved? And how is work proceeding today at the Non-Chernozem construction projects?

The Yaroslavl' builders began the five-year plan at a good pace. Without additional capacities and without expanding their organizations, they were able to increase the volume of work completed by 14 percent. This is especially gratifying if you consider that quite recently the oblast was among those lagging behind. Changes for the better were noticed as early as last year. Then the Yaroslavl' Oblast management and the contractors themselves - the Yaroslavl'stroy /rural construction/ Trust, an interkolkhoz association - put things straight in the planning and established strict control over the fulfillment of assignments. All contract agreements have now been reached within established time periods and there is a clear work schedule for 1982. With management well organized, the path toward improving the quality of labor at construction sites is beginning. Discipline has been strengthened. They are putting their primary emphasis on the brigades. Nearly half of the Yaroslavl'stroy collectives are working by the Zlobinka method /po-zlobinski/. The experience of Yaroslavl' Oblast deserves careful study and dissemination.

This is all the more important in view of the fact that on the whole the construction program is not proceeding satisfactorily. Such oblasts as Smolensk, Kaliningrad, Kirov, Kaluga, Murmansk and the Komi ASSR are lagging behind the planned level by 8 and more percent. What is worse the builders of Vologda Oblast are not doing as well as they did last year. The leading contract organizations have even reduced their work volumes. The Vologdatyazhstroy /Vologda Trust for the Construction of Heavy Industry Enterprises/ Association and Cherepovetsmetallurgkhimstroy /Cherepovets Trust for the Construction of Heavy Industry and Chemical Industry Enterprises/ did not succeed in taking urgent measures at the construction projects to be completed in the current year. Work on the Kharovskiy flax plant, for example, has dragged on for three and a half years; it was to have been completed in just 18 months. And now less than half of the work has been completed, although by the end of the year the enterprise is to be in operation. The Vologda hog-raising complex has a similar long history. Its completion has been planned, but as before the plans are being disrupted. Now the planning and organizational squabbling is basically over. It is important to analyze the results of the first six months and to outline rigid steps which will ensure the completion of all the construction projects slated for completion this year.

In the program for the development of the Non-Chernozem an important role has been given to the union construction ministries. At the top of the list are the USSR Ministry for the Construction of Heavy Industry Enterprises, the USSR Ministry of Construction and the USSR Ministry of Industrial Construction, which are today heavily indebted to the workers of rural areas. Having powerful organizations in the oblasts, these ministries still are not working at full capacity on construction projects in the Non-Chernozem. Each year they fulfill their plans by only 86 to 90 percent. For example, this year the organizations of the USSR Ministry of Construction are not keeping up with their assignment and have already failed to complete 19.5 million rubles worth of work on time. The volumes of construction and installation work have dropped sharply in Smolensk, Kaliningrad, Novgorod and Kalinin oblasts. The reason for the lagging behind is the dispersal of equipment and significant shortcomings in supporting the construction process with material-technical resources and the poor use of the production base, lifting and earthmoving equipment, and also the labor of the workers. The managers of the contractor ministries are constantly assuring us that they are prepared to release all resources for rural construction projects; the collegiums of the ministries are making the appropriate decisions, but the change for the better cannot yet be seen. Good intentions alone are not enough. There is also a need to establish a sequence for the conduct of this work and to come up with a clear organizational work and stricter control over the work of the subordinate elements.

The work of the republic-level organizations is cause for serious concern. The RSFSR Ministry of Rural Construction, Roskolkhozstroy /RSFSR Association for the Construction of Kolkhozes/ Association, Glavmosoblstroy /Main Administration for Construction in Moscow Oblast/ and other departments have underfulfilled contract work in the Non-Chernozem by hundreds of millions of rubles during the past five-year plan. They have performed no better in realizing the new program. There are serious omissions in the work of the territorial associations, administrations and trusts and poor control on the part of the local party and council organs and the managers of the departments themselves. They frequently explain the plan disruptions by saying that the contractors were not prepared to accept the sharply increased volumes of rural construction. Is this true? The Roskolkhozstroy Association alone had 1.33 billion rubles at its disposal for the development of its base in the 10th Five-Year Plan. An imposing sum of 805 million rubles was spent by the RSFSR Ministry of Rural Construction, which created during these years in the oblasts of the Non-Chernozem 12 rural and 3 house building combines. An appropriate question is, "where is the output"? Quite the opposite evolved - the interkolkhoz organizations slowed the growth rates. The RSFSR Ministry of Rural Construction has an even worse record - it is performing in a downward direction: in 1979 its collectives reduced work volumes by 1.4 percent; in 1980 it lost another 4.5 percent; and this year it has done 3 percent less than for the same period last year.

The problem is that in achieving the assimilation of funding and introducing new capacities for the construction industry, many managers show little concern about the complete return of expenditures. Let us take a house building combine at the Pogrega railroad station in Bryansk Oblast. It was handed over in 1974 and it was estimated to obtain a yearly 50,000 square meters of housing. However, today the enterprise is producing 10 times less. Is there a lot of good from this? Particularly, if one takes into consideration that next to the oblast center is a rural construction combine, which also has an enormous reserve capacity. There are quite a few such cases. The base of the republic organizations in the Non-Chernozem is used at 50 to 70 percent. The situation is somewhat better for the enterprises that are subordinate to the USSR-level ministries, but even here one fifth of the capacity is not put to use.

If one looks more deeply into the reasons, it turns out that they are rather typical. For example, what prevents the Bryansk enterprises from making more complete use of its capacities? Previously made blunders. The mistakes of the designers and unfinished construction work are still making themselves known. More than once the principle of the comprehensive approach has been violated; and now the lack of several auxiliary shops is seriously slowing production. Mathematical errors are the result of hurrying. However, rather than hastening to put reserves into operation, the ministries are compensating for their construction of new combines, thereby permitting their previous mistakes to be made again.

Another reserve is to more fully use the favorable summer weather. In many administrations and trusts the second shifts are undermanned and the equipment is not operating fully during the daytime. For the builders the summer must be a busy period. In this sense the builders should follow the example of the agricultural workers. Even a simple increase in a shift for a couple of hours will yield an immediate effect and will prevent the costly December all-out, full-staff work. The maximum use of the good weather, the full loading of equipment and mechanisms is the chief concern of the managers of construction projects, the local party and council organs. The work of the public dining facility, transport and customer services must be subjugated to this.

In the recently released Decree of the CPSU Central Committee and the USSR Council of Ministers concerning the further development and raising of efficiency of agriculture in the RSFSR Non-Chernozem in the years 1981 through 1985, the builders have been given specific tasks for the five-year plan. And today in each organization performing work in the Non-Chernozem there must be a clear program for the introduction of agricultural construction projects and for the processing sectors of industry, aimed at the unconditional fulfillment of the plans. During the past two months the majority of the contract administrations, associations and trusts have been able to noticeably pull themselves together. However, the lag that has been allowed to develop since the

start of the year has not yet been overcome. The ministries, departments and managers of the construction organizations in place with the participation of the councils of ministers of the autonomous republics and the oblast executive committees must study the state of affairs at each construction project in order to further speed up the pace of the work and to get on schedule.

Non-Chernozem Land Reclamation

Moscow SEL'SKAYA ZHIZN' in Russian 2 Oct 81 p 2

/Article by Ye. Brezitskiy, engineer of the USSR Ministry of Land Reclamation and Water Economy; A. Kubekin, chairman of the Kardymovskiy Rayon Peoples' Control Committee; and A. Glazkov, SEL'SKAYA ZHIZN' correspondent; Pskov, Kaluga and Smolensk: "Land Reclamation Projects: Not That Running Start"7

/Text7 In the RSFSR Non-Chernozem 16 large bases for the construction industry are being built to meet the needs of those engaged in land reclamation.

The newspaper SEL'SKAYA ZHIZN' has published quite a bit on the progress in creating these bases. Today the newspaper is printing material compiled by its raid brigade.

Before proceeding to Pskov, Kondrovo in Kaluga Oblast and Kardymovo in Smolensk Oblast, where combined enterprises of the construction industry's Glavnechernozemvodstroy /Main Administration for Water and Land Reclamation Construction in the Non-Chernozem7, we reviewed what had been published in this newspaper on the subject and the answers we had received from the involved ministries and departments. The picture at several construction projects is cause for concern. The managers of the contractor and subcontractor organizations have assured us that in the near future the shortcomings will be eliminated and that construction will soon be strictly on schedule.

But here we are at the construction sites. There has been a noticeable improvement in the state of affairs. Many construction projects are being designated for completion this year and several have already been put into operation. In Kondrovo the production and technological assembly base and a motor transport enterprise have been accepted by the client. In Pskov a plant, which will produce 22,000 cubic meters of reinforced concrete articles, has been handed over.

It is true that there was good reason to have expected more. The all-out efforts at the end of the year which took place, for example, at the Pskov plant are still making themselves known: numerous unfinished tasks still have not been taken care of. The builders still have not submitted the crane tracks in the operating shops to the boiler inspection.

As concerns the Kardymovo construction project, so far nothing has been completed. Although they are planning this year to hand over the production and technological assembly base (UPTK), the boiler and fuel oil

storage and supply system, the external networks and housing units, judging from everything, these good intentions will remain on paper.

Also cause for concern is the fact that the measures that were taken following the newspaper article were effective for only a short period of time. These measures included adding personnel to the mechanized column, which is conducting work in Kondrovo. Afterward everything reverted back to the way it had been. As before the construction projects are being hit by a shortage of metal and reinforced concrete structures, brick, and other materials. The time periods for their deliveries are not being maintained. Thus, in August the Kondrovo base received only 21,000 bricks instead of 170,000 and 253 cubic meters of reinforced concrete. The monthly requirement for reinforced concrete is 1,200 cubic meters.

Specialists from the Stal'konstruktsiya /steel structure/ Trust got off to a good running start in building the Kardymovo base, but they are prevented from doing a truly good job by supply problems - finished structures are being delivered on an irregular basis. They do not have enough skilled workers at the construction site. At the same time the brigades are waiting for hours at a time for concrete from the Smolensk reinforced concrete articles plant.

At the Kondrovo base one encounters "unfinished construction" everywhere. In places the work has stopped for a day or two, but an impression is created that the workers are waiting to be pushed. The railroad spur to the fuel oil storage and supply system has not been completed, although only a few pieces of track need to be laid. Two wells have been drilled, but the power supply system has not been regulated. At the same time the construction site is experiencing difficulties with water. Before winter sets in, in order to begin the installation and checking of equipment it is necessary to provide heat for the facility, but only 3 to 5 men are working in the boiler facility each day. By the way, the shortage of labor is a problem common to all three bases.

The motor transport enterprise is listed among the projects to be completed this year. But there is now no certainty that it will be handed over to the client. It came as no surprise that when we visited the construction site with the work superintendent, A. Ankundinov, we found only 20 workers here, although at least 150 men are required. Nor were we surprised to learn that the construction and installation work plan is being fulfilled by scarcely 50 percent by the Administration No 85 of Trust No 44 of the USSR Ministry of Construction.

The chief engineer of the board of Pskovpromvodstroy /Pskov Industrial and Water and Land Reclamation Construction Administration/, V. Mikhailov, says that "the boiler can rightly be called the primary construction task; however, in spite of repeated assurances, the builders over a year and a half time period have done very little work. The installers showed up at the construction site only at the end of July."

Since work on the boiler facility has dragged on, the general contractor, the Prodmontazh Trust, is proposing to hand over only one boiler by the end of the year, saying that this is sufficient heat for the capacities that are being completed. But the boiler facility must provide heat not only for the enterprise but for a housing microregion as well. Can it be that the builders have forgotten about this?

The builders have had many complaints about the quality of the manufactured articles that are being delivered for the construction of the bases. The preassembled reinforced concrete articles must be finished in place. The frames were done roughly.

The subcontractors, who are performing the installation and sanitary engineering work, are indebted to the builders. The Kardymovo sector of the Tsentsantekhmontazh /Central Installation and Sanitary Engineering/ Trust is holding up the handover of the housing units. The installers from Energotekhmontazh /Power Equipment Installation/ are not hurrying to do their work. The Kardymovo construction site is waiting for heat, but the boiler facility's pipework has not been completed and fuel oil storage capacities have not been established.

The peoples' controllers are not standing idly by. They are checking the quality of the construction work. Based on the conclusions reached by the inspectors of the Kardymovo construction site waste has been eliminated which had been permitted when driving the piles beneath the housing units. But many shortcomings still have not been eliminated. The interaction of the peoples' controllers of the construction projects and the supplier-plants would be useful in this matter.

The slow pace of the construction of the bases has resulted in a situation in which a portion of the design documentation has already become outdated, requiring that it be done over. It is necessary to put in a good word about the Moscow Designing Institute, PI-2, the specialists of which are constantly keeping watch over the construction projects that are in progress and are "rehashing" designs in accordance with requirements on a day to day basis.

Having studied the experience of creating these three large unified bases of the construction industry, one involuntarily asks which of these construction projects must be finished first? The UPTK base in Kondrovo has been built, but how is it being used? As a warehouse for storing equipment for the base. A warehouse in which, by the way, the equipment is aging and wearing out due to the delays in the construction. At the same time the construction of house-building combine, the production of which is so needed by the village, including the workers of the land reclamation organizations, has not been started for all intents and purposes: only the pilings have been driven under the foundation. The construction of a house-building plant in Kardymovo has also been put off until the final stage.

It is clear that we cannot tolerate such a state of affairs. All involved organizations must reexamine their attitude toward the key construction projects of the Non-Chernozem. More attention must be given to these projects by the oblast party and council organs and Glavnechernozemvodstroy. It is necessary to organize work in such a way so that the projects slated to be handed over this year do not become projects to be completed - next year.

8927

CSO: 1821/047

METALWORKING EQUIPMENT

STANDARD NET OUTPUT IN MACHINEBUILDING EXAMINED

Moscow FINANSY SSSR in Russian No 11, Nov 81 (signed to press 15 Oct 81) pp 26-31

[Article by Candidate of Economic Sciences Yu. Ye. Krotov, USSR Gosplan subdepartment deputy chief: "Normative Net Output and Its Operation"]

[Text] The transition to planning production volume using the new indicator of normative net output (NNO) is one of the primary directions of improvement in economic planning work in industry, in increasing the objectivity of activity evaluation and economic incentives for labor collectives.

NNO was first used experimentally in 1973 and was already being used in practice by 3,140 enterprises and associations of 28 ministries and departments, including all enterprises of the Ministry of Heavy and Transport Machinebuilding, Ministry of Power Machinebuilding, Ministry of Machinebuilding for Light and Food Industry and Household Appliances, Ministry of Machinebuilding for Animal Husbandry and Fodder Production and the Moscow gorispolkom, by June 1981.

The experiment's results were reviewed when preparing the system of measures to perfect the economic mechanism and are reflected in CPSU Central Committee and USSR Council of Ministers Decree No 695. In it, NNO is given a leading role in planning the activity of industrial ministries and enterprises (associations). It will be used to evaluate growth not only in production volume, but also in labor productivity, as well as to establish normatives for the wage fund and for deductions to a unified science and engineering development fund. NNO will also be used as the basis for determining the increase in production of output in the highest quality category, evaluating the use of fixed production assets (return on capital) and setting up a number of other economic calculations: production capacities, capital intensiveness, normatives of expenditures of certain material values (electric power, fuel, auxiliary materials) which are now based on commodity output volume.

As is known, all the above-enumerated functions of the NNO indicator have until recently been invested in commodity output in comparable prices. In this connection, the opinion is widely held that NNO is called upon to completely replace commodity output, which is entirely false.

Commodity output is the total amount of output manufactured, in cost terms, including newly created value, whose amount depends on the labor efforts of workers of a given enterprise, and the cost of material values obtained as objects and means of labor which are used in the production process.

Output volume (gross, commodity and marketed) has been and remains necessary in accounting and planning work. Without it, we cannot calculate expenditures on production, profit, profitability, circulating capital and other important indicators of production economy. The shortcoming of the system of planning indicators previously in effect was not that it was based on output volume indicators, but that they were used too widely and given functions not inherent to them, ones which did not stem from their economic essence. For example, output volume was the basis for determining labor productivity growth, number of workers, return on capital and a number of other indicators not at all connected with output volume, but with the volume of work done by a given production collective (see chart).

Commodity and Net Output Functions



Key:

- | | |
|--|--|
| 1. Commodity output | 8. Normative net output |
| 2. Reflects output volume and serves as a calculation base | 9. Reflects work volume and serves as a base for calculation |
| 3. Production expenditures | 10. Number of workers |
| 4. Turnover of circulating funds | 11. Return on capital |
| 5. Profit | 12. Labor productivity |
| 6. Circulating capital | 13. Average wage |
| 7. Profitability | 14. Wage fund |

But output volume and work volume are in fact not identical concepts. Let's say a garment factory collective can produce one million rubles worth of output or 300,000 rubles worth in one month with the exact same amount of work, depending on what fabric is being used, wool or cotton. An equals sign can be placed between output volume and work volume when determining rates of growth or level of plan fulfillment only in exceptional cases, as when an enterprise produces only one type of product year after year, or when it produces several types, but of identical materials-intensiveness, or when it produces different types with different materials-intensiveness, but the specific importance of each in the total volume is unchanged, both in the two periods being compared (when determining growth rates) and in both the plan and the reporting (when determining plan fulfillment level).

The consequences of the economically unjustified expansion of the functions of commodity output as an indicator are well known: the appearance of "profitable" (materials-intensive) and "unprofitable" (labor-intensive) output, which means insufficient objectivity when planning and evaluating activity and in economic incentives and a constant striving by enterprises to increase the release of materials-intensive output, which is counter to the interests of society.

NNO thus does not replace commodity output, but takes on some of its functions associated with reflecting work volume.

Economic planning and accounting-analysis work has naturally been complicated somewhat: yet another indicator has been added and the necessity has appeared, simultaneously with wholesale prices for new types of output, of working out and approving corresponding net output normatives. This is objectively inescapable. Just as it is impossible to improve output quality without additional labor by workers, foremen, technologists and designers, so it is impossible to improve the primary links of the economic mechanism -- planning and evaluating activity and economic incentives -- without additional efforts. And introducing NNO is one of the most important elements in this improvement.

The activity of an industrial enterprise is a very complex conglomerate of production, scientific-technical, social and sociopolitical phenomena and factors. Its resultancy can be evaluated only by using a complex of indicators, each of which reflects one or several of its elements. There is, nor in principle can there be, one synthetic indicator which would enable us to provide if not an exhaustive, then at least a consolidated comprehensive evaluation of enterprise work results.

It is from precisely such positions that we should approach the resultancy of using NNO: precisely delimit the sphere of its primary tasks, imagine its additional potential for solving a number of concomitant tasks, and not view it as a panacea for all production-economic disorders.

Science and practice have formulated quite precisely the primary economic tasks of this indicator: objective determination of the growth rates in production volume (own work volume) and labor productivity; on this basis, improve wage fund planning and improve its use, capital return calculations and a number of other indicators and normatives associated with industrial enterprise own work volumes. Such objectivity in planning and evaluating activity and economic incentives, with subsequent feasible organizational-technical measures, cannot but yield positive results. It is precisely this that is NNO's basic role in improving production efficiency. One cannot manage effectively without objective data on the state of affairs!

The concomitant economic tasks whose resolution is facilitated by NNO include: reducing the materials-intensiveness of the output, more successful fulfillment of plans for releasing it in a prescribed products list and quantity, and utilization of new types of output.

The length of a newspaper article does not enable us to reveal the actual situation regarding the whole complex of problems of using NNO. We shall limit ourselves to a detailed analysis of evaluating the use of the planned wage fund, as it is this very question to which individual specialists have addressed their NNO complaints. The analysis will also enable us to measure the objectivity of NNO as compared with

commodity output and the pattern of work results divergence using these indicators. The latter is especially needed, since use of NNO has from the start aroused a natural desire to compare work results using the one and the other indicator.

As is known, planned wage fund use is evaluated by comparing actual expenditures with the plan, which is recalculated to percentage plan fulfillment in terms of production volume. Previously, commodity output was used as the indicator of production volume, and now, NNO (as enterprises change over to planning using this indicator).

All is correct, from objective, scientifically substantiated positions. It is in fact NNO which can most fully evaluate an enterprise's own work volume and, in so doing, the wage fund demand. Clearly, the garment factory's output volume growth in connection with the increased production of wool dresses in place of cotton ones in no way signifies a greater wage fund demand. However, certain specialists think such a method facilitates wasteful wage fund expenditures. Commodity output, in their opinion, ensured a stricter approach to this. Formally, the fact is that the level of plan fulfillment using NNO is somewhat higher than using commodity output in a majority of cases, including for the grand total of all enterprises using this indicator. As a result, many enterprises can, when evaluating wage fund use, compare their actual expenditures with the higher value of plans recalculated using this indicator as against that which would have resulted were the planned fund to be recalculated in the old way, based on plan fulfillment in terms of commodity output. On the basis of this formal circumstance, doubt is cast on the objectivity of NNO as an indicator without analyzing the essence of the problem. Inasmuch as this approach is taken rather often, let's examine the essence of the matter using the example of a specific enterprise whose results in terms of output production and NNO volume are given in the table [following page]. In order to avoid the extreme cumbersome-ness of the products list, it is naturally given in a consolidated form.

Actual enterprise work results correspond to the report I variant; variant II is hypothetical, adopted to better clarify the essence of the question.

First, it is completely wrong to simply compare work results in terms of commodity and normative net output. They in fact reflect different aspects of production: output volume and own work volume. The opinion that commodity output ensures a stricter approach to evaluating wage fund use, which is based on average data on percentage of plan fulfillment for commodity and normative net output, actually makes commodity output a benchmark in comparison with which the reliability and objectivity of NNO is "determined." Were this correct, the question of the necessity of improving the system of production volume indicators would not arise and commodity output would henceforth characterize production volume and dynamics as their sole indicator. Let's examine both report variants (see table).

Variant I

It is evident from the table that the production plan was overfulfilled for machine types A, B and C, that is, items with higher and equal materials-intensiveness (0.730, 0.690 and 0.576), as against the average value for output as a whole. This led to a situation in which overall enterprise output materials-intensiveness actually rose from a planned 0.576 to 0.581 and, as a result, percentage of plan fulfillment for commodity output (100.1) exceeded the corresponding result for NNO (99 percent). Own work volume was below plan.

Machinebuilding Plant Output Report

(1) Наименование продукции	(2) Сопоставимая отпускная цена, руб.		(3) Чистая продукция, руб.		(4) План на 1981 г.		(8) Отчет		(12) % выполнения плана		(15) Дополнительные данные к табл. 1				
	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(16) а) в общем объеме товарной продукции, %	(17) б) в общем объеме товарной продукции, %	(18) в) в общем объеме товарной продукции, %	(19) г) в общем объеме товарной продукции, %	(20) д) в общем объеме товарной продукции, %
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
machine type A	61 600	26 200	11	677,6	288,2	1	12	739,2	314,4	109,1	109,1	3,1	3,3	0,424	0,576
machine type B	118 000	31 900	28	3 304	893,2	11	11	677,6	288,2	100,0	100,0	14,9	15,9	0,270	0,730
machine type C	78 600	24 400	119	9 233,4	2 903,6	1	26	3 938,0	829,4	92,8	92,8	42,2	42,6	0,310	0,690
cooperative delivery	—	—	—	789,0	4 660,0	1	118	9 274,8	2 979,2	99,2	99,2	35,6	36,4	0,588	0,412
gas tanks	9,5	6,8	80 000	760,0	544,0	1	80 000	760,0	544,0	100,0	100,0	3,4	3,4	0,716	0,284
kitchen sets	0,62	0,4	300	186	120,0	1	300	186,0	120,0	100	100	0,8	0,8	0,645	0,355
total	22 171	9 469	1	22 197,2	9 312,0	1	—	22 033,7	9 427,6	100,1	99,0	100	100	—	—

total

22 171 9 469

22 197,2 9 312,0

22 033,7 9 427,6

Additional analysis data describing total output volume, by cost element:

- 1) gr. 6 : gr. 5 = 0.424
- 2) 1 - gr. 15 = 1 - 0.424 = 0.576
- 3) gr. 10 : gr. 9 = 0.419 (var. I)
- 4) 1 - gr. 15 = 1 - 0.419 = 0.581
- 5) gr. 10 : gr. 9 = 0.428 (var. II)
- 6) 1 - gr. 15 = 1 - 0.428 = 0.572

Key: 1. Output

2. Comparable wholesale price,

rubles

3. NNO, rubles

4. 1981 plan

5. Number of units

6. Com. output, 1,000 rubles

(gr. 2 x gr. 4)

7. NNO, 1,000 rubles (gr. 3 x gr. 4)

8. Report

9. Report variant

10. Com. output, 1,000 rubles (gr. 2 x gr. 8)

11. NNO, 1,000 rubles (gr. 3 x gr. 8)

12. Plan fulfillment, percent

13. Using com. output (gr. 9 : gr. 5) x 100

14. Using NNO (gr. 10 : gr. 6) x 100

15. Reference data for analysis

16. Share of total com. output volume, percent

17. Plan (sum gr. 5 : volume by line)

18. Report (sum gr. 9 : volume by line)

19. Output type by cost element

20. Specific labor-intensiveness (gr. 3 : gr. 2)

21. Spec. materials-intensiveness (1 - gr. 15)

When evaluating plan fulfillment in terms of production volume on the basis of output volume, that is, in terms of commodity output, the wage fund use results are entirely satisfactory. Given an actual expenditure of 6.204 million rubles, there is a relative savings, since the initial wage fund plan (6.2 million rubles), when recalculated as a measure of actual plan fulfillment using commodity output, is:

$$\frac{6.2 \times [100 + (0.1 \times 0.8)]}{100} = 6.205 \text{ million rubles,}$$

where 0.1 is the percentage of plan overfulfillment based on commodity output and 0.8 is a correction coefficient established for this particular branch with consideration of the proportion of wages dependent on change in production volume.

When NNO is used, this "satisfactory" result is disregarded. It is initially calculated only for analysis. But the wage fund use evaluation based on plan fulfillment results using own work volume, that is, NNO, is "unsatisfactory"; not only does the enterprise have an absolute wage fund overexpenditure, but is also has a relative one, since the recalculated plan for this fund reaches only:

$$\frac{6.2 \times 100 - (1.0 \times 0.8)}{100} = 6.15 \text{ million rubles,}$$

where 1.0 is the percentage of plan underfulfillment using NNO.

The conclusion that the plan fulfillment result based on NNO more reliably reflects the enterprise collective's own labor efforts, confirmed only by the fact that production materials-intensiveness has increased, is not immediately convincing. To support it, let's agree on an inversely proportional dependence between specific materials-intensiveness and specific labor-intensiveness. If actual specific production materials-intensiveness exceeds the plan, actual specific labor-intensiveness must be below the planned value. In this example, specific labor-intensiveness as reported decreased to 0.419 as against the planned 0.576. To simplify the table's calculations, we adopted as specific labor-intensiveness the specific NNO value in the item's price, but for items as a whole -- the specific NNO value in commodity output.

Analysis of the variant I report incontrovertibly proves that the lesser wage fund value due the enterprise as a measure of plan fulfillment using NNO as against the calculation based on commodity output has been established completely objectively.

Variant II

Its results are directly contradictory to those of variant I. The plan is overfulfilled in terms of the relatively less materials-intensive items (cooperative deliveries, gas tanks and kitchen sets), but is not fulfilled in terms of the more materials-intensive ones. As a result, the plan was not met in terms of commodity output (99.4 percent), but the overall level of the collective's labor efforts was still adequately high and the plan was somewhat overfulfilled (by 0.2 percent) in terms of NNO. Recalculating the planned wage fund as a measure of plan overfulfillment using NNO provided an overall relative savings of this fund. Had the summation been done on the basis of data using commodity output, we would have obtained a wage fund overexpenditure. Here is the calculation:

actual wage fund expenditure	6,204,000 rubles
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plan, using wage fund adjusted for plan overfulfillment (by 0.2 percent) when NNO is used	6,210,000 rubles
plan, using wage fund adjusted for plan underfulfillment (by 0.6 percent) when commodity output is used	6,170,000 rubles
result of using wage fund when evaluating:	
on the basis of NNO	savings of 6,000 rubles
on the basis of commodity output	overexpenditure of 34,000 rubles

To what extent is the evaluation of wage fund use based on plan fulfillment using NNO objective? Are those who consider evaluation on the basis of commodity output more exacting correct?

The answer can only be NNO. Whereas the analysis of the variant I report confirmed the lack of substantiation for a positive evaluation of the results of wage fund use on the basis of data using commodity output, the second example shows that a negative evaluation of these results is in error.

The somewhat less-than-planned labor efforts of the collective when manufacturing highly materials-intensive items (machines B and C) were fully covered by the additional labor ensured by plan overfulfillment in terms of cooperative deliveries and consumer goods. And, inasmuch as NNO reflects only one factor -- level of own labor efforts -- the plan was overfulfilled in terms of this indicator by 0.2 percent, with a corresponding, substantiated additional wage fund demand.

But two factors -- level of own labor and level of materials-intensiveness -- influence the commodity output value. A reduction in the latter due to plan underfulfillment in terms of highly materials-intensive items naturally cannot be compensated for by plan overfulfillment in terms of less materials-intensive items, that is, by cooperative deliveries and consumer goods. But the materials-intensiveness of the output and wage payments are entirely different categories which are not connected. Wages and the wage fund objectively -- both in the plan and when evaluating their use -- must be connected only with the own work volume, which is reflected through NNO.

It is not easy, especially psychologically, to immediately reject many years of tradition in planning and evaluating labor indicators on the basis of commodity output. Some mistrust of and prejudice against NNO as a new phenomenon are natural. Therefore, enterprise and superior management and supervision agency workers must concretely analyze the degree and cause of divergence between work results using NNO and those using commodity output in the first year of NNO use.

The reason is clear: a structural shift in output composition, given different materials-intensiveness. But the reason must be "filled in" with material content: due to precisely which items has the shift occurred and what is their materials-intensiveness? Such a refinement is very useful for concrete elucidation, using enterprise material, of the mechanism of normative net output operation.

Analysis of the causes of divergence in growth rates (level of plan fulfillment) for commodity and normative net output using materials from hundreds of enterprises permits a number of conclusions.

First, this divergence is a result of the operation of two factors: structural shift in the composition of the output being produced, which should be taken to mean

changes not only in types of output, but also in the specific values of each type in overall output volume; the different materials-intensiveness of individual types which, given the structural shift, change its overall level in comparison with the base period or the plan.

Second, such divergence is practically unavoidable for each enterprise and can differ only in amount. Divergence will be absent only in exceptionally rare instances: if output composition has not changed for the two periods being compared (or in the report as against the plan) and the specific value of each type has even been retained in the overall volume; if the output composition has changed, but the materials-intensiveness of new types of output equal the average materials-intensiveness of all output in the base period or the plan.

Third, the divergence is subordinated to a precise natural law: when the proportion of output materials-intensiveness rises in the period under review, the growth (percentage of plan fulfillment) in commodity output outstrips analogous NNO results; given a reduction, the picture reverses.

Fourth, the discrepancy between rates of labor productivity growth (percentage of plan fulfillment) as evaluated on the basis of commodity output and NNO has absolutely the exact same direction and value as the discrepancy between these data using commodity output and NNO. This is natural, since the third indicator participating in these calculations -- growth in the number of industrial-production personnel (plan fulfillment) -- is the same. This means there is no need to analyze the cause of the discrepancy in labor productivity growth rates (plan fulfillment) for both evaluations: the cause is the same.

In addition to these four conclusions, a fifth question arises: is there not some pattern to outstripping growth in NNO, for example, as compared with commodity output or the reverse for a large group of enterprises as a whole?

In principle, practical resolution of the task of saving materials in production, which has been advanced by the 26th CPSU Congress and a subsequent CPSU Central Committee and USSR Council of Ministers decree, obviously leads to outstripping rates of growth in NNO as compared to commodity output growth for industry as a whole. This is indicated as well by the clear trend towards a higher specific labor-intensiveness in many new types of output as a result of technical improvements and more exacting demands as to efficiency and quality.

Another, counter, trend is also quite evident. The reference is to the necessity of continuing to broaden and deepen specialization and cooperation as a necessary condition for steady growth in labor productivity on a base of production mechanization and automation, which is gradually increasing the proportion of by-product intermediate products, parts, subassemblies and items in overall product cost. These expenditures, while not characterizing the physical materials-intensiveness of the output of a specific enterprise, still are formally a part of its material expenditures.

It is hard to say now which of the two trends in the dynamics of materials-intensiveness will prevail in the future. But the relationship of rates of growth in normative net and commodity output will depend precisely on this. Let us restrict ourselves just to ascertaining the actual state of affairs during the experiment in using NNO: each year, beginning in 1973, the 0.5 to 1.0 point growth in NNO exceeded

commodity output growth for all enterprises using this indicator. In 1978, for example, NNO increased by 5.1 percent and commodity output increased by 4.1 percent; in 1980, the difference was 0.9 point.

At the same time, among the smaller groups of such enterprises, such as the "Soyuzkormmash" all-union production association, NNO growth in 1978 (103.4 percent) lagged behind commodity output growth (106.7 percent). The situation was similar in enterprises of the Ministry of Machinebuilding for Light and Food Industry and Household Appliances in 1979 -- 105.2 and 106.5 percent, respectively, and among enterprises of the Ministry of Machinebuilding for Animal Husbandry and Fodder Production in 1980 -- 103.2 and 106 percent.

As was already noted, normative net output must "operate" as part of a complex of basic technical-economic indicators of the production-economic activity of enterprises, associations and ministries, performing specific functions. At the same time, it seems that precisely because of its economic content, NNO is called upon to become a leading indicator in this complex. Its broad introduction will be an important stage in improving the planning and evaluation of enterprise activity and in economic incentives.

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METALWORKING EQUIPMENT

BALL BEARING PRODUCTS AT EXHIBITION DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 81 (signed to press 21 Apr 81) p 33

[Article by S. Mironov: "Bearings for Aviation Construction"]

[Text] More than 15 countries participated in the specialized international exhibition on "Bearing production designs and technology. Special equipment, instruments and devices for the bearing industry" -- "Podshipniki-81" -- in Moscow.

The Soviet exhibit was among the most impressive. Our industry is now producing as many as a billion bearings of 20,000 different types annually, with diameters from 0.5 mm to 2 or more meters and weighing from a fraction of a gram to 6 tons.

We know that the efficiency and precision of metalworking mills, the operating reliability of electric motors and other power units, and the economy of operation and servicing equipment, including aviation equipment, depends upon the quality of bearings. Without them, many units and components in aircraft and helicopters, as well as special ground transportation, would not be able to operate.

Aviation bearings with inside diameters between 6 and 30 mm used in aircraft control system units were exhibited widely in the Soviet exhibition at the exposition. A self-lubricating duplex radial thrust bearing was demonstrated. The control unit in which it is used can withstand substantial radial and axial loads and can operate at temperatures of up to +400°C.

One plant exhibited an entire series of bearings: single-row spherical radial ball bearings with diaphragm seal; special radial needle roller bearings with protective washers; and self-aligning needle roller bearings with conical openings. The latter are designed for heavy duty aircraft control units operating under rocking conditions at temperatures between -60 and +250°C. Single-row radial roller bearings without separators which are sealed on both sides can double or triple the service life of units operating under various climatic conditions.

Other exhibits were also of interest, especially the experimental model of a paired radial thrust ball bearing. Used aboard aircraft, it withstands substantial axial (one-sided and combined) loads at temperatures up to +250°C. Visitors to the exposition could see experimental models of roller bearings without an inside ring. These are intended for operation in hydraulic drive fluid at high temperatures.

The bearings, a broad assortment of which was presented at the international exposition, represent to a significant degree the level of modern production of this branch of machine building.

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